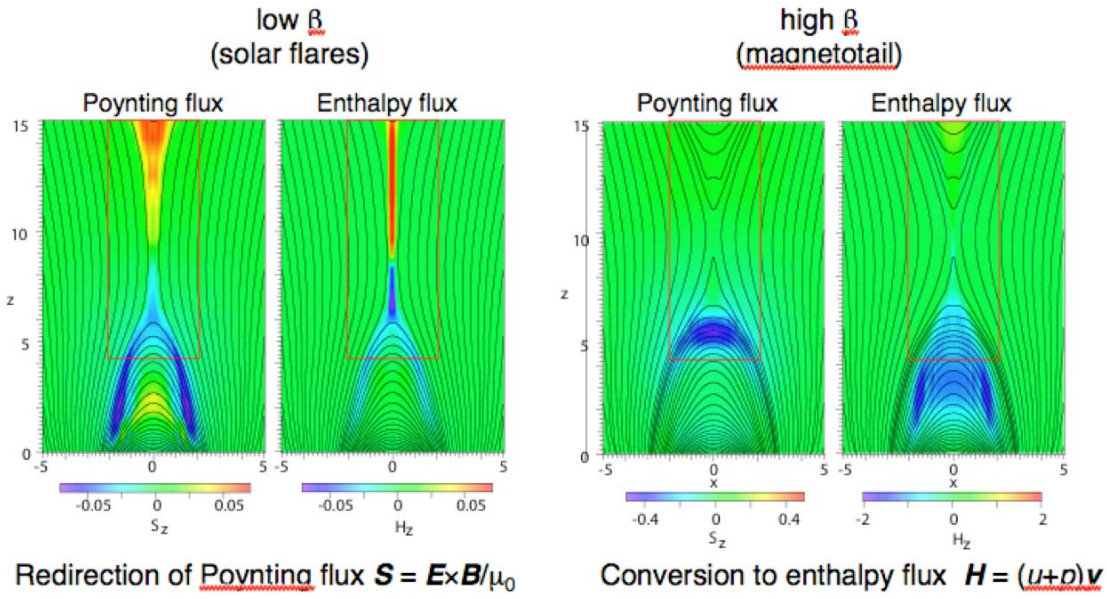
Energy Conversion by Reconnection in Substorms and Solar Flares

P.I. *Joachim Birn* LAN

Three-dimensional MHD model simulations by NASA's HTP LANL/GSFC research group are unraveling characteristics of energy conversion by reconnection in substorms and solar flares:

- Release of magnetic energy to Poynting flux, enthalpy flux, bulk kinetic energy flux.
- Output downward mainly into Poynting flux and enthalpy flux (thermal).
  - Enthalpy flux dominates for high beta (substorms)
  - Poynting flux dominates for low beta (flares)
  - Bulk kinetic energy flux mainly to open region
- Heating in collapsing flux tube.



Reference: Birn et al., Ann. Geophys. 2008/9 (i review)